

character of the testes and larger ova, also in that the seminal vesicle extends farther back of the ventral sucker, and the vitellaria do not reach to a point as near the ventral sucker. Furthermore while *C. vitellosus* tends to taper towards the posterior end, *C. fimbriatus*, as a rule, maintains its breadth back of the ventral sucker and is bluntly rounded at the posterior end. There are, however, many contraction shapes in both species which make it difficult to fit descriptions to them.

ORNITHOLOGY.—*Bird bones from Eskimo ruins on St. Lawrence Island, Bering Sea.*¹ HERBERT FRIEDMANN, U. S. National Museum.

During several seasons of excavating ancient and more modern Eskimo habitations on St. Lawrence Island, Mr. H. B. Collins, Jr., Assistant Curator of Ethnology, United States National Museum, amassed a large collection of avian bones. Inasmuch as all his material was carefully collected with full stratigraphical data, it is possible to determine, in a relative sense, the different ages of the various specimens. Furthermore, since the time limits range from village sites abandoned half a century ago to some probably 2500 or more years old, the ages of the diggings vary appreciably. Of course, while 2500 years means a great deal in human cultural biology, it is of little moment as far as birds are concerned. The collection totals several thousand bones, all of which have been carefully studied and identified and are reported on in this paper. The bones are referable to 45 species of which 10 are new to the known avifauna of St. Lawrence Island. These 10 are as follows:

PUFFINUS TENUIROSTRIS	Slender-billed Shearwater
BRANTA CANADENSIS MINIMA	Cackling Goose
BRANTA NIGRICANS	Black Brant
MELANITTA DEGLANDI	White-winged Scoter
MELANITTA PERSPICILLATA	Surf Scoter
MERGUS MERGANSER subsp.	Merganser
HETEROSCELUS INCANUS	Wandering Tattler
LARUS CANUS BRACHYRHYNCHUS	Short-billed Gull
RISSA BREVIROSTRIS	Red-legged Kittiwake
BRACHYRHAMPHUS BREVIROSTRIS	Kittlitz's Murrelet

In addition to these, several species previously recorded on the basis

¹ Published by permission of the Secretary of the Smithsonian Institution. Received October 9, 1933.

of observational records alone, are represented in the present collection.

These bones, together with the collection of birds reported on in a previous paper (Proc. U. S. Nat. Mus., 80, art. 12: 1-31. 1932.) give a fairly comprehensive picture of the avifauna of the island. Perhaps the most striking single feature is the complete absence of any species of ptarmigan, although both the Alaskan and the Siberian mainlands and most of the islands between them are inhabited by one or more forms of these birds.

In attempting to analyze the data from the viewpoint of ornithology, rather than ethnology or anthropology, we must remember that the number of bones of a given species is not a reliable index to the abundance of that species with respect to another, less abundantly represented, as the factor of human selection plays a large rôle. Thus, there are no raven bones in the present collection, but this does not mean that there were no ravens on the island at the time when the old villages were flourishing; it only means that Eskimos did not look upon ravens as food and did not kill them and leave their bones in and around their huts. On the other hand, it is obviously unlikely that the Eskimos would have been able to get numbers of birds of species that were rare at the time, so an abundance of remains does indicate a high numerical status for the species. It is the relative abundance of species that is chiefly affected by the element of selection. (By selection is meant not only the volitional choice of the Eskimo, but also his ability to procure the bird in question. Thus, a strong flying species that feeds over the open ocean, and relatively seldom roosts on the cliffs on the island would be very difficult to get and so, while desired by the Eskimo, might be "selected out" by his inability to get it.) Also some selection was involved in the actual collecting of the specimens.

The species most abundantly represented in the collection is Pallas's murre. It is obviously the most important single bird species to the Eskimo, and it is obvious from the enormous number of bones, that the species was as abundant in the past as it is in the present.

The other birds commonly used for food include the crested and the paroquet auklets, the Pacific and king eiders, and, strangely enough, the pelagic cormorant. One of the surprises was the paucity of goose bones, especially of the emperor goose. Pigeon guillemot, oldsquaw, long-tailed jaeger, red-faced cormorant, and short-tailed albatross come next in descending order of frequency, and after them come a large number of species, present in varying quantities.

The village sites involved in this study have been described by Collins (*Geogr. Review* 22: 109-114. 1932.) from whose account the following remarks are extracted.

On the gravel spit near the present village of Gambell, at the north-west end of the island, are three abandoned villages, known to the Eskimos as Miyowaghameet, Ievoghiyogameet, and Seklowaghyaget, while a recently abandoned village immediately adjoins the present settlement of Gambell. The gravel spit extends westward from Gambell Mountain, on the slopes of which is the oldest village site, the one referred to in this paper as Hillside Village.

At the opposite, southeast, end of the island is the old village site of Kialegak, judged to be of approximately the same age as Ievoghiyogameet. The estimate of the age of the sites is, of course, very vague but in the case of the four villages near Gambell, it was possible for Collins to work out a relative, chronological sequence, even if the absolute age was indeterminable. To quote him on this point:

Beginning at the base of the mountain and extending westward to the village at the end of the spit is a series of parallel ridges of gravel—old beach lines—which from the top of the mountain can be seen very distinctly. The position of the several old villages in relation to these former beach lines and to the present beach affords some evidence of their respective antiquity, for villages of the maritime Eskimo are always situated close by the sea or other body of water. The ruins closest to the present village at the end of the spit should be the latest; these are the recently abandoned houses . . . and the adjoining old site Seklowaghyaget. . . . In the same way the oldest of the abandoned villages should be Miyowaghameet . . . three-fourths of a mile away at the base of the mountain and half a mile distant from the sea and enclosed in the first two (the oldest) beach lines. Ievoghiyogameet . . . , some 200 yards north . . . (of Miyowaghameet), is separated from it by four beach lines and thus should date from a somewhat later period. Between . . . (it) . . . and the north shore are six more old beach lines, most of which were no doubt piled up after the abandonment of the village.

The archeological evidence resulting from four months of intensive excavation bore out this assumed sequence. . . . A fifth site . . . (Hillside Village) . . . , unknown to the Eskimos and completely covered over with sod, moss, and rocks, was found on the lower slope of the mountain. . . .

To sum up for our immediate purposes, the oldest site is Hillside Village, estimated as possibly 2500 or more years old; next is Miyowaghameet, assumed to be about 2000 years old; then Ievoghiyogameet, around 1000 years old; Kialegak corresponds in age with Miyowaghameet and Ievoghiyogameet, chiefly with the latter; Seklowaghyaget is estimated to have been occupied up to about 200 years ago, and the recent Gambell site is supposed (on hearsay evidence from the natives, as well as from the nature of the excavated materi-

als) to have been abandoned about 40 years ago. The lower strata of its middens may be 100 years older.

In the course of his work Collins made a great many cuttings or diggings in each of these sites and recorded the levels of each. Of these individual diggings about 75 revealed bird bones. The time element in each site between superficial and basal strata is, however, too short to be of significance as far as the ornithological results are concerned, however much it may mean to the anthropologist, and in this paper I have combined many of these individual data.

I am greatly indebted to Mr. Collins for much information regarding the location and relative age of the sites, and for his patience in answering many questions more or less relevant to the immediate topic at hand.

The specimens of bones are all in the United States National Museum.

Family GAVIIDAE Loons

GAVIA ADAMSI (Gray) Yellow-billed Loon

The yellow-billed loon is represented only in the diggings of sites about 1000–2000 years old; thus the northern and western sections of Miyowaghameet yielded a fragmentary sternum, radius, and metacarpal; Ievoghiyogameet a fragmentary sternum; while the Kialegak site at the opposite end of the island produced a tarsometatarsus and a metacarpal of this bird.

Judging by the size of the bones of this species, which would make for both their preservation and discovery, the few bones found and the few diggings containing them seem to indicate that either the bird was always scarce or hard to get or not sought after by the Eskimos.

GAVIA ARCTICA PACIFICA (Lawrence) Pacific Loon

The Pacific loon appears first in the Ievoghiyogameet site where it is represented by a broken sternum. The Kialegak ruins yielded a single tibiotarsus attributable to this species. In the recent site at Gambell a part of a skull and a broken sternum were found. All in all, the story is similar to that of the yellow-billed loon, a scarcity of remains of the species due to the same several possible factors.

GAVIA STELLATA (Pontoppidan) Red-throated Loon

The diggings at Ievoghiyogameet and at Miyowaghameet, disclosed several bones of the red-throated loon. Ievoghiyogameet revealed this species in three separate cuttings representing the whole

time duration of the village deposit, from the surface layer to the basal portion, the bones (single ones in all cases) being a sternum, a tibiotarsus, and a metacarpal. At Miyowaghameet, in the relatively younger northwest deposits an ulna was found. In the much more recent deposits at Seklowaghyaget a tibiotarsus was unearthed.

Family DIOMEDEIDAE Albatrosses

DIOMEDEA ALBATRUS Pallas Short-tailed Albatross

In my paper on the birds of St. Lawrence Island (Proc. U. S. Nat. Mus., 80, art. 12: 8. 1932.) I wrote that although Nelson and Turner saw this albatross at sea near and about St. Lawrence Island, the only definite records for the island are two mandibles found there by Nelson and a maxilla dug up by Collins at Miyowaghameet. A study of the present collection of bones has revealed this species in no less than ten separate cuttings ranging from the most recent sites to the most ancient one—the extent of time between the two extremes being around 2500 years or more. Beginning with the oldest, we may mention them in chronological sequence: Hillside Village, fragments of humeri, ulnae, and metacarpals; Miyowaghameet, 4 separate diggings, a total of one pair of maxillae, 1 pair of clavicles, 1 fragmentary ulna, 1 fragment of a mandible, 1 tarsometatarsus; Ievoghiyogameet, 2 cuttings, 1 fragmentary pair of clavicles, 1 tarsometatarsus, 3 metacarpals; Seklowaghyaget, 1 tibiotarsus; Gambell (recent) 2 cuttings, 1 humerus, 1 pair maxillae, 1 ulna, 1 radius.

Apparently the short-tailed albatross was used for food whenever it could be obtained. The large size of its bones makes it probable that relatively fewer were overlooked by the collector than in the case of smaller bird bones.

Family PROCELLARIIDAE Shearwaters, Fulmars

PUFFINUS TENUIROSTRIS (Temminck) Slender-billed Shearwater

This species has not been recorded previously from St. Lawrence Island. It is represented by a coracoid in perfect condition, found at Miyowaghameet.

FULMARIUS GLACIALIS RODGERSI Cassin Rodger's Fulmar

Bones of this fulmar are noticeably scarce in the present collection, only two being definitely attributable to the species. At Ievoghiyogameet a coracoid was unearthed, and at Kialegak a tibiotarsus was

found. The fulmars, being very pelagic in their habits are probably seldom killed by the Eskimos, a fact that may help to explain the absence of further osseous remains.

Family PHALACROCORACIDAE Cormorants

PHALACROCORAX PELAGICUS PELAGICUS Pallas Pelagic Cormorant

The pelagic cormorant is represented in 17 individual diggings, from the most ancient to the most recent. It was most abundantly found in the deposits at Kialegak, where it was unearthed in 6 separate cuttings, and at Ievoghiyogameet, where it was revealed in five cuttings; 2 diggings at Miyowaghameet turned up bones of this cormorant as did also 2 cuttings at Seklowaghyaget; the ancient hillside village near Gambell and the recent village at Gambell each revealed one bone of this bird. Although in most of the 17 diggings only single bones or only a very few were found, in the upper layers at Ievoghiyogameet no less than 16 tarsometatarsi were unearthed. This extraordinary abundance makes one wonder what unusual conditions may have made the birds so accessible or sought after at that time.

It is noteworthy that although many limb bones were found, only 4 synsacra and 1 sternum were unearthed, and no parts of the skull or mandibles.

PHALACROCORAX URILE (Gmelin) Red-faced Cormorant

Hitherto this cormorant has been known from St. Lawrence Island only on the basis of Nelson's statement that it is a, ". . . more or less common summer resident" there. No specimens have been taken in the flesh as far as I know. However, bones attributable to this species are included in the results of 8 diggings, but only in cuttings of ancient sites. It may well be that the species was formerly more abundant on St. Lawrence Island than it is today, but no reasons can be advanced to account for its change in status. The most ancient site, the Hillside Village revealed a fragment of a humerus; Ievoghiyogameet yielded the greatest number of bones distributed among 4 cuttings, one of which contained as many as 12 tarsometatarsi and 3 tibiotarsi; while 3 cuttings at Kialegak produced 2 humeri and 1 tarsometatarsus. The fact that the species is represented at both ends of the island (Gambell and Kialegak) indicates that it was widespread in its local range. If it were present in only one place, it might have been assumed that its hypothecated decrease might have been due to the decimation of the sole colony on the island.

Family ANATIDAE Ducks, Geese, Swans

CYGNUS COLUMBIANUS (Ord) Whistling Swan

When one considers the gastronomic desirability of this, the largest edible bird on the island, and its fairly even distribution there, it is surprising that its remains have been found only in the deposits at Kialegak and not in any of the old sites near Gambell. At Kialegak it is represented by a pair of clavicles and several fragmentary bones found in 3 separate diggings.

BRANTA CANADENSIS MINIMA Ridgway Cackling Goose

The cackling goose is an addition to the known avifauna of St. Lawrence Island. It is represented in 2 cuttings of the upper layer of the Kialegak site; in one by a coracoid, in the other by a pair of clavicles.

BRANTA NIGRICANS (Lawrence) Black Brant

This goose is also new to the known bird fauna of the island. It is represented by a metacarpal found in a basal digging at Kialegak.

PHILACTE CANAGICA (Sevastianoff) Emperor Goose

The remains of the emperor goose are remarkably few in number considering the abundance of the bird on St. Lawrence Island, and the extent to which it is hunted and used for food by the Eskimos. Furthermore, its bones are present in neither the two oldest sites (Hillside Village and Miyowaghameet) nor the most recent one (Gambell), but chiefly in the diggings at Kialegak, and, in small numbers, in 2 cuttings at Seklowaghyaget. At Kialegak bones of the emperor goose were found in 5 cuttings; at Seklowaghyaget in 2 diggings. Strangely enough, almost no long bones were unearthed, but chiefly metacarpals and fragments of clavicles and coracoids.

The fact that the majority of the bones come from Kialegak at the southeast end of the island is in keeping with the present distribution of the bird. It is found chiefly in the southern part of the island, especially in the vicinity of the long lake and lagoons. On the north side the species is not nearly so common.

ANSER ALBIFRONS ALBIFRONS (Scopoli) White-fronted Goose

The white-fronted goose is represented in the remains from Kialegak (2 diggings) and Ievoghiyogameet (1 cutting), in all cases by metacarpals only. It is peculiar, to say the least, that all four species

of geese are represented by bones other than the long limb bones usually preserved, such as the humerus, femur and tibiotarsus.

Apparently the white-fronted goose has always been an uncommon bird in St. Lawrence Island, as it is today.

DAFILA ACUTA TZITZIHOA (Vieillot) American Pintail

The pintail is represented by a single bone, a tarsometatarsus found at Kialegak.

NYROCA MARILA (Linnaeus) Greater Scaup Duck

One sternum, collected at Ievoghiyogameet, is referable to this duck. Previously the greater scaup duck was known from St. Lawrence Island only on the basis of Nelson's statement of its occurrence there. No specimens were collected by him.

CLANGULA HYEMALIS (Linnaeus) Old-squaw

The old squaw is one of the commonest ducks on the island, and its bones have been found in 12 diggings, the greatest number being at Kialegak, where it is represented in 7 cuttings. The oldest bones come from Miyowaghameet (3 diggings); one fragmentary skull was found at Ievoghiyogameet, and a piece of a sternum was unearthed in the recent village site at Gambell.

HISTRIONICUS HISTRIONICUS PACIFICUS Brooks

Western Harlequin Duck

The western harlequin duck is represented by bones chiefly in the Kialegak and Ievoghiyogameet sites. In the former it was found in 4 diggings; in the latter village, in 2 cuttings. A single coracoid comes from the excavations at Seklowaghyaget as well. The Kialegak and Ievoghiyogameet specimens are all humeri except for a pair of tarsometatarsi.

POLYSTICTA STELLERI (Pallas) Steller's Eider

Steller's eider appears among the remains of the oldest site, the Hillside Village, in the form of a fragmentary femur. Otherwise it is represented only from Kialegak, where, however, it figures in four diggings, 3 of which yielded a humerus apiece and 1 a synsacrum.

SOMATERIA V-NIGRA Gray Pacific Eider

The Pacific eider is abundantly represented in the present collection, its bones being recorded from 32 separate cuttings, ranging

throughout all the sites and ages except the very oldest (Hillside Village), and Seklowaghyaget. At Miyowaghameet, it was found in 3 cuttings; at Ievoghiyogameet, in 7 cuttings; at Kialegak, in 20 diggings; at the recent Gambell site, in 2 diggings.

SOMATERIA SPECTABILIS (Linnaeus) King Eider

Today the Pacific eider is much more abundant on St. Lawrence Island than the king eider, but, if we may judge by the skeletal remains, the latter species was somewhat the commoner of the two in the pre-historic past, or else was often selected as an object of the chase by the Eskimos. Remains of the king eider are included in the material excavated at 37 different diggings. The oldest village site revealed a coracoid of this duck, and its bones have been found at each of the other village deposits except, strangely enough, the recent village site at Gambell. At Miyowaghameet it was found in 1 cutting; at Ievoghiyogameet in 3 cuttings; at Kialegak, where it was found in greatest numbers, in 31 diggings; at Seklowaghyaget in 1 digging. The absence of this species from the recent Gambell site is of interest in connection with its relative decrease in abundance at present.

ARCTONETTA FISCHERI (Brandt) Spectacled Eider

The spectacled eider is represented only in the collections from Kialegak, where it was found in 4 cuttings. All in all, 3 humeri and 4 coracoids were unearthed.

MELANITTA DEGLANDI (Bonaparte) White-winged Scoter

The discovery that this duck was represented in no less than 9 diggings at Kialegak is very surprising in view of the fact that the species had never been recorded from the island before. To find a bird new to the local avifauna in a single cutting is a thing to be expected, but to find such abundant evidence of one is really unusual. It is significant that the species was found only from the southeast end of St. Lawrence Island, the point nearest its mainland range. The bones include 2 tarsometatarsi, 2 tibiotarsi, 1 coracoid, and many fragmentary pieces.

MELANITTA PERSPICILLATA (Linnaeus) Surf Scoter

A humerus, found at Kialegak, is of this species. The surf scoter is new to the avifauna of St. Lawrence Island. As far as I know, this is the most northwestern locality whence the species has been recorded as yet.

OIDEMIA AMERICANA Swainson American Scoter

The American scoter seems (from somewhat inconclusive evidence) to have been commoner on St. Lawrence Island in the past than it is today. Bones of this duck are present in the collections made in 5 different diggings at Kialegak. Of naturalists who have made observations on the bird life of the island, only Nelson has recorded this species, and he reported it as occurring only sparingly there. None of the collectors since the time of Nelson's visit have found it.

The fact that no bones of this duck were found at any of the sites at the northwest end of island suggests that even in the past (perhaps 1000 years ago) its range on the island was very limited. This may still be so, and may be the reason recent visitors have failed to find it.

MERGUS MERGANSER subsp. indet. Merganser

A number of bones, from 5 different diggings at Kialegak, are definitely referable to this species, but I cannot find any diagnostic skeletal characters by which to determine their subspecific identity. Neither race of the merganser has ever been found near St. Lawrence Island and either one might be the form involved as the island is just about half way between the known limits of their respective ranges. If the bird should turn out to be the nominate Eurasian form, it would be an addition to the North American avifauna, if it should be *M. m. americanus*, it would be a considerable extension of range. The species is new to St. Lawrence Island.

The bones include 1 humerus, 1 radius, 2 ulnae, 7 metacarpals, and 1 tibiotarsus.

MERGUS SERRATOR Linnaeus Red-breasted Merganser

The red-breasted merganser is represented by a tibiotarsus and a metacarpal, both from Kialegak (2 separate diggings).

Family GRUIDAE Cranes

GRUS CANADENSIS CANADENSIS (Linnaeus) Little Brown Crane

Three village sites (Miyowaghameet, Ievoghiyogameet, and Kialegak) yielded bones of this crane. Most of the bones are fragmentary but a whole tarsometatarsus was found at Ievoghiyogameet. In a bird of this size the absence of records from a deposit is fairly good evidence that the species was either not present or was not fed upon by the Eskimos.

Family SCOLOPACIDAE Woodcock, Snipe, and Sandpipers

HETEROSCELUS INCANUS (Gmelin) Wandering Tattler

A humerus found in one of the basal diggings at Kialegak appears to be of this species. St. Lawrence Island is the northwesternmost locality from which this bird has been recorded so far. The wandering tattler is an addition to the avifauna of the island.

Family STERCORARIIDAE Jaegers and Skuas

STERCORARIUS POMARINUS (Temminck) Pomarine Jaeger

The pomarine jaeger is represented only in the material excavated at Kialegak, where its bones were found in 4 separate diggings.

STERCORARIUS PARASITICUS (Linnaeus) Parasitic Jaeger

The three oldest village sites (Hillside Village, Miyowaghameet, and Kialegak) yielded osseous remnants of the parasitic jaeger, but the more recent sites did not. Only a few bones were found in all—3 humeri, 3 tibiotarsi, 1 ulna, and several fragments.

STERCORARIUS LONGICAUDUS Vieillot Long-tailed Jaeger

The abundance of bones of this jaeger came as a distinct surprise as the species was not previously recorded as particularly common on St. Lawrence Island. Bones attributable to it were found in twenty-six diggings, from the oldest site (Hillside Village) to the newest (the recent Gambell site). In the Hillside Village site a fragmentary humerus and a tarsometatarsus were found; at Miyowaghameet (4 cuttings) 7 humeri, 4 tarsometatarsi, and 3 tibiotarsi were found; at Kialegak bones were found in 15 separate cuttings, the bones including 7 humeri, 1 coracoid, 6 tarsometatarsi, 2 femurs, and fragments; at Ievoghiyogameet (5 diggings) 8 humeri, and 4 tarsometatarsi were collected; at Gambell (recent) 2 tarsometatarsi were unearthed.

This bird is said to walk about on the ground when feeding on insects, and it is probably at such times that the Eskimos are able to kill it in numbers.

Family LARIDAE Gulls, Terns

LARUS HYPERBOREUS Gunnerusm Glaucous Gull

The ancient Hillside Village yielded a fragmentary humerus and a piece of a mandible of this gull; a coracoid was found at Miyowaghameet; 2 cuttings at Ievoghiyogameet produced 1 skull, 1 extra max-

illa, 1 tarsometatarsus, and 1 coracoid; the Kialegak collection contained a pair of mandibles.

LARUS GLAUDESCENS Naumann Glaucous-winged Gull

This gull is more abundantly represented in the collection than the preceding species. It was found in 7 diggings at Miyowaghameet, Ievoghiyogameet, Kialegak, and the recent site at Gambell. The remains include 4 metacarpals, 1 fragmentary skull, 1 pair of mandibles, 1 sternum, 1 ulna, and fragments.

LARUS BRACHYRHYNCHUS Richardson Short-billed Gull

This gull was not mentioned in my list of the birds of St. Lawrence Island (Proc. U. S. Nat. Mus. 80, art. 12. 1932), but I have since found that Bent (Bull. U. S. Nat. Mus. 113: 145. 1921.) states that it breeds on the island. Furthermore, the map in Cooke's paper on the distribution of North American gulls (U. S. Dept. Agric. Bull. 292: 47. 1915.) shows a record for St. Lawrence Island. Bones of this gull were found in 3 diggings, all at Ievoghiyogameet. The bones include 3 ulnae and a sternum.

RISSA TRIDACTYLA POLLICARIS Ridgway Pacific Kittiwake

This gull is represented in 11 diggings in the old village sites (Hillside Village, Miyowaghameet, Kialegak, and Ievoghiyogameet) and seems to have been as numerous 1000 or more years ago as it is today. A broken pair of mandibles found at Hillside Village and an ulna from Miyowaghameet are the oldest specimens in the order named. Kialegak site contained many bones, as 4 cuttings there revealed this species; but the greatest abundance of kittiwake bones was found at Ievoghiyogameet, where 5 cuttings yielded 1 sternum, 1 pair of mandibles, 1 skull, 6 ulnae, 1 humerus, and 1 metacarpal.

RISSA BREVIROSTRIS (Bruch) Red-legged Kittiwake

This gull is an addition to the avifauna of St. Lawrence Island. It is represented by a pair of mandibles found in a superficial digging at Ievoghiyogameet. This constitutes a considerable northward extension of the known range of the species.

Family ALCIDAE Auks, Murres, Auklets

URIA LOMVIA ARRA (Pallas) Pallas's Murre

This, the most abundant bird on St. Lawrence Island today, is also by an enormous percentage, the species most abundantly represented

by the bones from the old village sites. It is represented in 69 diggings, from all the sites and of all the ages. It is also represented by almost as many individual bones as all the other species combined. Two humeri, collected at Kialegak, match exactly humeri of *Uria aalge californica*, but I am not convinced that it is advisable to attempt to separate the two murrens on the basis of their humeri as they are so very similar and overlap in their dimensions.

It is obvious that Pallas's murre is the most important avian item of food in the lives of the St. Lawrence Eskimos.

CEPPHUS COLUMBA Pallas Pigeon Guillemot

This guillemot is represented by bones from 16 diggings from all the village sites except Seklowaghyaget. Apparently its numerical status on St. Lawrence Island has not changed much during the last 2500 or so years.

BRACHYRHAMPHUS BREVIROSTRIS (Vigors) Kittlitz's Murrelet

A humerus from a basal digging at Ievoghiyogameet is the only record of this murrelet for St. Lawrence Island. Although it is known to breed on both the Alaskan and Siberian coasts of Bering Sea and adjacent parts of the Arctic Ocean, it had not been reported from St. Lawrence Island before.

CYCLORRHYNCHUS PSITTACULA (Pallas) Paroquet Auklet

The paroquet auklet is abundantly represented in the diggings of all the village sites except the very old Hillside Village. The greatest quantity of bones came from Kialegak in the southeastern part of the island; fewer from the Gambell region at the northwestern tip. This is in keeping with present local distribution of this bird on St. Lawrence Island.

AETHIA CRISTATELLA (Pallas) Crested Auklet

The crested auklet, one of the common birds of St. Lawrence Island, is represented in 16 diggings, all from the sites at the northwest end of the island, and not at all from Kialegak at the opposite end, where it is replaced by the paroquet auklet, just as the two species complement each other's local range today. The old Hillside Village yielded 4 humeri; Miyowaghameet (4 cuttings) many bones; Ievoghiyogameet (6 cuttings) yielded still more, as many as 20 humeri, and 1 sternum being found in one digging alone; Seklowaghyaget (2 cuttings) produced several bones; and the recent Gambell site (2 dig-

gings) revealed many more, as many as 11 humeri and 3 sterna in one digging.

AETHIA PUSILLA (Pallas) Least Auklet

The least auklet is represented in 3 diggings from 3 villages at Gambell (Miyowaghameet, Ievoghiyogameet, and the recent Gambell site). Only a few bones were found in all, the total being 4 humeri and 1 sternum.

FRATERCULA CORNICULATA (Naumann) Horned Puffin

In spite of their abundance and size neither of the puffins inhabiting St. Lawrence Island seems to have figured very largely in the diet of the ancient Eskimos. Remains of the present species were found in 8 diggings representing the following sites: Miyowaghameet, Kialegak, and Ievoghiyogameet. Most of the bones were found singly; in 2 diggings more than 1 bone was found (2 in one case, 3 in the other).

LUNDA CIRRHATA (Pallas) Tufted Puffin

This puffin is more numerous than the horned species. It figures in 14 diggings from both ends of the island (Gambell and Kialegak). The specimens come from ends of the chronological series of excavations—from Hillside Village, Miyowaghameet, Ievoghiyogameet, Kialegak, as well as from the recent Gambell site.

Family STRIGIDAE Owls

NYCTEA NYCTEA (Linnaeus) Snowy Owl

The snowy owl is represented by a pair of metacarpals and by a few fragments, both from cuttings at Kialegak. The absence of bones of this species from the other sites and from the other diggings at Kialegak may mean that owls are not looked upon as a food supply as long as other birds are available.

ETHNOLOGY.—*Newly discovered Powhatan bird names.*¹ JOHN R. SWANTON, Bureau of American Ethnology.

Dr. Alexander Wetmore, assistant secretary of the Smithsonian Institution, has called my attention to an article in *The Auk* for July, 1933 which contains a number of bird names in Indian not apparently recorded elsewhere. The article is entitled *Topsell's 'Fowles of heauen'* and was read by its author, Bayard H. Christy, at the fiftieth meeting of the American Ornithologists' Union, Quebec, October 18, 1932.

¹ Received October 30, 1933.